WHAT IS CLAIMED IS:

1. A process for forming a conducting structure layer that can reduce metal etching residues, comprising steps as follows:

a substrate is provided;

a barrier layer is formed on the substrate;

a pre in-situ metal layer is formed on the barrier layer; and

a first metal layer is formed immediately after the pre in-situ metal layer is formed and in the same vacuum surrounding as the one in which the pre in-situ metal layer is formed.

2. The method of claim 1, wherein the pre in-situ metal layer includes one of the following materials: titanium, titanium nitride, or titanium tungsten.

3. The method of claim 1, wherein the first metal layer includes one of the following materials: aluminum, copper, tungsten, an alloy of aluminum silicon, an alloy of aluminum, silicon and copper, an alloy of aluminum and copper, an aluminum alloy, an copper alloy, or an tungsten alloy.

4. The method of claim 1, wherein a step for processing the barrier layer is included.

5. The method of claim 4, wherein the step for processing the barrier layer includes either high temperature tempering treatment or cooling in the air for a period of time.

6. The method of claim 4, wherein the barrier layer includes at least a second metal layer.

7. The method of claim 1, wherein the barrier layer includes one of the following materials: titanium, titanium nitride of titanium tungsten.

8. The method of claim 1, wherein the substrate includes a dielectric layer and an opening defined at the dielectric layer.

9. The method of claim 1, a step of depositing an anti-reflective layer on the first metal layer is also included.

10. The method of claim 9, wherein the anti-reflective layer includes titanium nitride in the step of forming the anti-reflective layer.

11. The method of claim 1, a photolithography and a etching step is also included to define the barrier layer, the pre in-situ metal layer, and the first metal layer.

12. A process for forming a conducting structure layer, comprising the following steps:

a substrate is provided;

a pre in-situ metal layer is formed on the substrate; and

a metal layer is formed on the pre in-situ metal layer.

13. The method of claim 12, wherein the metal layer is formed on the pre in-situ metal layer immediately after the pre in-situ metal layer is formed and the metal layer is formed in the same vacuum device in which the pre in-situ metal layer is formed.

14. The method of claim 12, wherein the pre in-situ metal layer includes one of the three materials: titanium, titanium nitride, or titanium tungsten.

15. The method of claim 12, wherein the metal layer includes one of the following materials: aluminum, tungsten, copper, an alloy of aluminum and silicon, an alloy of aluminum, silicon and copper, an alloy of aluminum and copper, an aluminum alloy, an alloy of tungsten, or an alloy of copper.

16. The method of claim 12, a photolithography and etching step is also included to define the pre in-situ metal layer and the metal layer.

17. A structure of conducting structure layer formed on a substrate, comprising: a barrier layer formed on the substrate; a pre in-situ metal layer formed on the barrier layer; and a first metal layer located on the pre in-situ metal layer.

18. The structure of claim 17, wherein the pre in-situ metal layer includes one of the following three materials: titanium, titanium nitride, or titanium tungsten.

19. The structure of claim 17, wherein the first metal layer includes one of the following materials: aluminum, tungsten, copper, an alloy of aluminum and silicon, an alloy of aluminum, silicon and copper, an alloy of aluminum and copper, an aluminum alloy, an alloy of tungsten, or an alloy of copper.

20. The structure of claim 17, wherein the barrier layer includes at least a second metal layer.

21. The structure of claim 17, wherein the barrier layer includes one of the following three materials: titanium, titanium nitride, or titanium tungsten.

22. The structure of claim 17, wherein the substrate includes a dielectric layer and an opening that is defined at the dielectric layer.

23. The structure of claim 17, which also includes an anti-reflective layer. The anti-reflective layer is located on the first metal layer.

24. A structure of conducting structure layer formed on a substrate, comprising:

a pre in-situ metal layer formed on the substrate; and

a metal layer formed on the pre in-situ metal layer.

25. The structure of claim 24, wherein the pre in-situ metal layer includes one of the following three materials: titanium, titanium nitride, or titanium tungsten.

26. The structure of claim 24, wherein the metal layer includes one of the following materials; aluminum, tungsten, copper, an alloy of aluminum and silicon, an

alloy of aluminum, silicon and copper, an alloy of aluminum and copper, an aluminum alloy, an alloy of tungsten, or an alloy of copper.